

Journal Prompt: Where Does the "Useful" Energy Go?

Every energy conversion device you rely on, from a car engine to a light bulb, loses some energy as unwanted heat.

Prompt: Choose one technological device you use regularly (for example, a car, a refrigerator, or a furnace). Describe the energy conversions it performs, then explain why it cannot convert 100% of its input energy into useful output, tied to [Outcome](#).

Where to start:

- What form of energy enters your device, and what form does it produce as useful output?
- Where does the "lost" energy go, and in what form does it usually leave the system?
- Why do the first and second laws of thermodynamics make a perfectly efficient device impossible ([Outcome](#))?
- How might an engineer measure or improve this device's efficiency?

Stretch:

Research the approximate efficiency rating of your chosen device and compare it to a different technology that performs a similar function (for example, an incandescent bulb versus an LED). Explain which design choices account for the difference in efficiency.